

**WEST LOS ANGELES COLLEGE
DEPARTMENT OF DENTAL HYGIENE**

- I. DH 256: BIOCHEMICAL NUTRITION FOR THE DENTAL HYGIENIST
- II. PREPARED BY: Lisa Kamibayashi, R.D.H, M.S.D.H.
- III. REVISED FOR: SPRING 2014
- IV. PREREQUISITES: DH 100, DH 101, DH 102, DH 103, DH 104, DH 105, DH 106, DH 109 & DH 150
- V. UNITS AND HOURS: THREE UNITS, 3 HOUR COURSE
MSA 103
Monday 8:30 A.M. – 9:50 A.M.
Thursday 8:30 A.M. – 9:50 A.M.
- VI. COURSE INSTRUCTOR: Lisa Kamibayashi, R.D.H., M.S.D.H.
OFFICE HOURS: WEDNESDAYS 11:00 a.m. to 1:00 p.m.
Or arranged on an individual basis
- Contact Information: mrskamiba@gmail.com
Office Phone: 310-287-4457

VII. COURSE DESCRIPTION:

The science of nutrition is presented with an emphasis on the biochemical nature of nutrients, digestion, metabolism and growth. The effect of nutrition on health is studied. Clinical states produced by excess or deficiencies of interrelated nutrients are stressed.

VIII. REQUIRED TEXT:

Darby, Michele Leonardi, Walsh, Margaret M., Dental Hygiene Theory and Practice, third edition, Saunders Elsevier, St. Louis, MO 2010 (ISBN # 978-1-4160-5357-6)

Thomson, Evelyn, Case Studies in Dental Hygiene, third edition, Pearson, Boston, MA, 2013 (ISBN#978-0-13-291308-9):

Davis, J & Cynthia S. (2010) The Dental Hygienist's Guide to Nutritional Care, 3rd Edition. Philadelphia; Saunders.

LOGOTHETIS, D.D. Local Anesthesia for the Dental Hygienist, St. Louis, 2012, Mosby, First Ed.

CLARK, Morrison S. & Brunick Ann L. Handbook of Nitrous Oxide and Oxygen Sedation St. Louis, 2008 Mosby Co. 3rd Ed

Thomson, Evelyn, Case Studies in Dental Hygiene, third edition, Pearson, Boston, MA, 2013 (ISBN#978-0-13-291308-9):

X. COLLEGE LEARNING OBJECTIVES:

A. Critical Thinking: Analyze problems by differentiating fact from opinions, using evidence, and using sound reasoning to specify multiple solutions and their consequences.

Assessment: Upon examination, students will identify and apply biochemical and nutritional information that will be used to support dental hygiene practices.

B. Ethics: Practice and demonstrate standards of personal and professional integrity, honesty and fairness; apply ethical principles in submission of all college work.

Assessment: Students will complete all assignments and tests independently unless they are assigned to work in groups.

XI. DENTAL HYGIENE PROGRAM STUDENT LEARNING OBJECTIVES:

Professionalism

Program SLO #3: Understand and interpret the scientific literature and research as it relates to the evidence-based practice of dental hygiene.

Program SLO #4: Utilize current technology to enhance education, patient care, research and professional growth.

Program SLO #12: Apply problem solving strategies and critical thinking to insure comprehensive oral health care for individuals, groups and communities.

XII. COURSE OBJECTIVES:

As a result of study in this course, the dental hygiene student will be able to:

1. Describe RDAs, their functions, how they are set and the requirements of each specific age groups.
2. List the food groups, which foods belong to each group, serving size, nutrients common to specific
3. food groups and recommended servings for different populations from each group. Describe how to perform a diet evaluation and nutritional counseling using the food groups or the exchange system based on both the USDA's recommendations and recommendations in the scientific literature.
4. Recognize sources of carbohydrates. Assess the role of carbohydrate in the diet and the function of different carbohydrates and relate this to the patient's dental, periodontal and overall health.
5. Describe characteristics and functions of protein. Understand the importance of amino acid sequence. Relate importance of essential versus non-essential amino acids to diet and health.
6. Relate the relationship of enzymes to the flow of chemicals from dietary intake to new cell material or energy production in a cell.
7. Identify protein sources, understand the concept of quality protein and relate protein status to the patient's dental, periodontal and overall health.
8. Describe the structure and sources of triglycerides. Discuss the structure and function of cholesterol.
9. Trace digestion and absorption of carbohydrates, proteins and lipids. Recognize the pathways by which saturated and unsaturated fatty acids and amino acids are metabolized.
10. Identify concepts concerning macronutrient intake and subsequent insulin secretion they relate to energy needs/expenditures and their effect on body weight.
11. Identify functions, dietary requirements, results of excessive and inadequate intakes an common food sources of the water soluble and fat soluble vitamins, and major and trace minerals.
12. List guidelines for obtaining maximal nutritional value in selection, preparation and storage of foods.
13. Identify specific vitamins and minerals affecting oral pathology.
14. Apply nutritional information in guiding individuals in meal and snack planning at or away from home.
15. Give nutritional counseling aimed at preventing dental and periodontal disease.
16. Recognize clinical signs of nutritional status.
17. Understand how to read and evaluate a food label.
18. List common food processing practices and additives and explain how they affect nutrient quality.

The following Local Anesthesia and Nitrous Oxide Sedation objectives will also be addressed:

1. Discuss the pharmacological and clinical properties of local anesthetics and the vasoconstrictors.
2. Differentiate the different properties between ester and amide.
3. Identify local anesthetic drugs and vasoconstrictor currently used in anesthesia in dentistry.
4. Explain how local anesthetics work to transiently block nerve conduction both anatomically and physiologically.
5. Select an appropriate anesthetic agents and a vasoconstrictor for a specific case scenario.
6. Identify the indications and contraindications for using a vasoconstrictor.
7. List and explain the factors which affect the duration and onset of the action of the anesthetic agent.
8. Calculate numbers of the cartridges allowed to administer according to the maximum dose of a local anesthetic drug for a given case scenario.
9. Define nitrous oxide and oxygen as a sedative.
10. Indicate the route of nitrous oxide and oxygen from the point of inhalation to the elimination point.

11. Identify the properties of nitrous oxide, including: stability, solubility, color, odor, flammability and chemical composition.

12. Identify the physiological and pharmacological theories of induction and recovery.

Course SLOs	Assessment Method	Criterion Level
1. Apply biochemical and nutritional information that will be used to support dental hygiene practices.	Students will answer questions on an examination that will be analyzed by using a scantron scanner.	At least 80% of students will correctly answer 75% or more of the examination questions.
2. Recognize, describe and related biochemical concepts to improve a patient's oral health.	Students will analyze a patient's 3-day diet history and counsel them as to deficiencies & strengths. They will submit a paper with their findings.	At least 80% of students will identify 80% or more of strengths & deficiencies as defined by a rubric.

XIII. METHODS OF INSTRUCTION:

- Lecture/ Presentation
- Videos
- Student participation and presentation
- Student presentations of the nutrition component of RAP projects
- Hands on activities: Bring Color pens/pencils, Color construction papers, Scissors

XIV. METHODS OF EVALUATION:

The grade for the course will be based on:

2 Midterm Exams (includes pain control related questions) ---- 30 %, (15 % each)

Homework----- 15 %

Risk Assessment Project - nutritional analysis section ----- 10 %

Poster presentation at WLAC -----15 %

Final exam -----30 %

(No make up for Final Exam)

Course letter grade will be based on the following scale:

90 - 100% = A

80 - 89% = B

70 - 79% = C

69% & below = F

Homework and Project Preview

Homework #1: Keep the diet journals for 5 days using myfitnesspal.com. **(Due: 3/6/14)**

Homework #2: Produce a report for one of a classmate assigned for the diet journals. **(Due: 3/13/14)**

Homework #3: Go window shopping (again!). This time go to health food store and go to vitamin supplements and herb sections. Can you recognize all of the names? List at least 10 supplements that you are not familiar with and research what they are good for and how are they biochemically processed in our body? **(Due: 4/3/14)**

Risk Assessment Project (RAP): Patient nutritional analysis class presentation. Details will be given during DH 88 and during class time. **(Absolut Due: 5/29/14)**

Annual WLAC Poster Showcase Project: Every Spring semester, hundreds of students from different field of studies participate presentations of posters on campus. (This year is on **May 15, 2014**). As a part of class requirements, all students will be participating this poster session to demonstrate the knowledge of dental hygiene students' in biochemistry nutrition topics. Refer to this webpage for details:

<http://wlapostershowcase.weebly.com/>

Topics should be related to biochemistry/nutrition. It can be related to dentistry or it does not have to be related to dentistry.

Components of the poster must include all of the followings:

- Introduction
- Current status
- New ideas, concept, or problem
- Discussion using biochemistry knowledge
- Conclusion
- References used (Must have the original research articles available with the poster)

Topics must be approved by the course instructor by **2/20/14**

The poster is due on **5/12/14**. The showcase is scheduled on 5/15/14 afternoon.

Students are asked to present the poster in class for 5 to 10 minutes.

This can be a group project (up to 3 students in a group) or individual project. More details will be given during class time.

REMEDICATION If a student has a failing average (69% or lower) for the class prior to the FINAL examination, he or she will be required to complete remediation work. Remediation work will NOT be given if the failing average is due to cheating or plagiarism. In that case, a course of action will be decided by the Dental Hygiene director, the instructor and possible college administrators.

In the case of a failing class average prior to the final exam, remediation work must be completed at least 5 school days before the final examination date so the instructor has time to evaluate the work, meet with the student, and administer an exam. Remediation will consist of the student outlining chapters from the textbook as determined by the instructor, followed by re-examination during the instructor's office hours. The grade obtained on the re-examination will be averaged with his/her previous examination grade, not to exceed 70%.

Students must pass the final examination to pass the course. Final examinations cannot be retaken for the purpose of raising a student's grade.

Academic Integrity

Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. When there is evidence of cheating or plagiarism in classroom work, the instructor may assign a failing grade, "F," or zero points to the examination or assignment in which the alleged cheating or plagiarism occurred. Before a substandard grade is issued the instructor will provide the student with supporting documentation of the plagiarism or cheating charge. Instructors have the authority to use plagiarism detecting instruments such as "Turn It In" to detect academic dishonesty.

Forms of Behavior which Violate Academic Integrity

- **Cheating.** Using any materials or devices or strategies, which provide undue advantage on any exam, assignment, activity or other method of assessment for a course. This includes, but is not limited to, looking at another student's exam, using phones or other communication systems to text message during exams, taking pictures or images of exams, talking with others during exams, using Internet to find information, or any other system of inappropriate "help." Exams are to be measures of what YOU, as an individual, have learned.
- **Collaboration.** Working together on projects, papers, exams or other forms of assessment, which are to be completed individually.

- **Plagiarism.** Taking anyone else's work as one's own. Presenting another's words, ideas, forms of expression, materials, or labor without proper citation, referencing, and declaration that this material originated outside the student's own work.

CONSEQUENCES OF DISHONESTY: Violators of these rules are subject to disciplinary action. Depending upon the seriousness of the conduct, the student disciplinary procedures may range from receiving a zero for that exam to formal charges of violation with the WLAC standards of Student Conduct.

GENERAL RULES:

Cell Phone and Other Communication Devices

- If you bring your cell-phone to class, be sure to have it in a mode in which it will not ring and disturb others. If you have to answer an emergency phone call, please step out of the classroom. Devices of this type should be placed on vibrate and never visible during class time.
- Please help us keep the classroom and campus grounds clean. No Food or beverages, except for water, is permitted inside instructional classrooms /labs. Please use the receptacles to dispose of trash.
- If you are sick or in an emergency situation on the day of class, please email me before the class at mrskamiba@gmail.com. Please do not leave a message with your classmate.
- Student is required to bring all assigned materials to each class and/or lab session.
- If students socialize during class, their seating arrangement will be changed.
- If a student has a question that is not pertinent to the class material, she should ask the instructor during office hours.
- At times, students will be asked to participate in class. Failure to participate when called on will result in a deduction of 1 % of grade for each incident.
- All reading, video and web assignments are to be done prior to class and/or lab. Failure to do this will reduce your ability to understand and learn the concept being presented.
- Please make use of your instructor's office hours. Your instructor is available for discussion on all course material during office hours and/or by appointment.

XV. COURSE CONTENT OUTLINE and LECTURE SCHEDULE – SPRING 2014

Note: The schedule is tentative &, therefore, subject to change depending upon class progress. Students are responsible for all announcements & materials covered during his/her absence. RAP project Nutritional Analysis/Caries Risk homework/presentation will be announced & assigned with adequate notice.

Week	Meeting Date	DAY	LECTURE TOPIC	ASSIGNED READINGS
1	2/10/14	M	Overview of the course Class survey of biochemistry/nutrition background	
	2/13/14	Th	Basic Biochemistry Concept: Cellular Components Local Anesthesia - Neurophysiology	Logothetis: Ch. 2
2	2/17/14	M	President's Day Holiday	
	2/20/14	Th	<u>Poster Session Topic Due</u> Local Anesthesia - Pharmacology	Logothetics: Ch.3,4, 5 & 6
3	2/24/14	M	Local Anesthesia - Pharmacology	
	2/27/14	Th	Overview of Healthy Eating Habits RDH serves as a role of Nutritional Counselor Nutritional Assessment & Counseling Instruction on myfitnesspal (5 days)	Stageman Ch 1 & 20 Darby: Ch. 33
4	3/3/14	M	The Alimentary Canal: Digestion and Absorption	Stageman: Ch 2
	3/6/14	Th	<u>Self-report of myfitnesspal Due (H.W.#1)</u> Carbohydrates	Stageman: Ch 3
5	3/10/14	M	Proteins	Stageman: Ch 4
	3/13/14	Th	<u>Analysis of classmate's nutritional report & counseling (H.W. #2)</u> Lipids	Stageman: Ch 5
6	3/17/14	M	Use of Energy Nutrients: Metabolism & Balance	Stageman: Ch 6
	3/20/14	Th	Clarification, Catch Up, Exam Preparation	
7	3/24/14	M	Exam #1	
	3/27/14	Th	Vitamins, Minerals, Nutrients and Water Required for Calcified Structures and Oral Soft Tissues	Stageman: Ch 7, 8, 9, 10, 11
8	3/31/14	M	Cesar Chavez Holiday	
	4/3/14	Th	Vitamins, Minerals, Nutrients and Water Required for Calcified Structures and Oral Soft Tissues Research on supplements/herbs(H.W. #3 due)	Stageman: Ch 7, 8, 9, 10, 11
*	4/7/14	M	Spring Break	
	4/10/14	Th	Spring Break	
9	4/14/14	M	Nutritional Aspects of Dental Caries	Stageman: Ch 17
	4/17/14	Th	Nutritional Aspects of Gingivitis, Perio Disease and Oral Cavity	Stageman: Ch 18, 19
10	4/21/14	M	Nutritional Requirements Affecting O.H. in Women, Older Adults, During Growth and Development	Stageman: Ch 12, 13, 14
	4/24/14	Th	Considerations Affecting Nutrient Intake Effects of Systemic Disease on Nutritional Status Videos Viewing	Stageman: Ch 15 & 16
11	4/28/14	M	Exam #2	
	5/1/14	Th	Independent Study: Poster Session Preparation (Mrs. K not available)	
12	5/5/14	M	Nitrous Oxide Sedation – Physiology and Chemical properties	Clark: Ch 4, 5, 6, 7, 8, & 9
	5/8/14	Th	Nitrous Oxide Sedation – Physiology and Chemical properties	Clark: Ch 4, 5, 6, 7, 8, & 9
13	5/12/14	M	<u>Posters Due</u> Classroom Poster Presentation	
	5/15/14	Th	Poster Session Day Classroom Poster Presentation	
14	5/19/14	M	Classroom Presentation: RAP Patient Nutrition Analysis	
	5/22/14	Th	Classroom Presentation: RAP Patient Nutrition Analysis	
15	5/26/14	M	Memorial Holiday	
	5/29/14	Th	Classroom Presentation: RAP Patient Nutrition Analysis & Exam Review	
Final Week	TBA		Comprehensive Biochemistry-Nutrition Final Exam	